



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Hirokatsu HAYASHI, et al.

Serial No. 10/520,466

Filed: January 7, 2005

For: CAKE OF EASILY DISPERSIBLE PRECIPITATED SILICA

DECLARATION

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

I, Hirokatsu HAYASHI, declare that:

1. I have conducted certain experiments which are described in the attached report.
2. I am one of the inventors/applicants who filed U.S. Application Serial No. 10/520,466 for Letters Patent, on January 7, 2005.
3. All statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated this 3rd day of October, 2008

Hirokatsu Hayashi

Hirokatsu Hayashi

REPORT

In order to verify that the easily dispersible precipitated silica cake of Claim 1 of the present application differs from the precipitated silica cake as described in Kono et al. (US 6,417,264 B1), I have conducted reproduction experiments of Kono's Examples 5 (i.e., Reference Example given in column 7, lines 1-15 of Kono).

[Reproduction experiments of Kono's Example 5]

A reactor was charged with 1250 mL of No. 3 sodium silicate solution (mol ratio $X = 3.2$), which was diluted by addition of 6750 mL of ion-exchange water. This initial reaction liquid (sodium silicate concentration, 5%) was maintained at 40°C, and into which 22% sulfuric acid was added under stirring, at a rate of 31 mL/min. For 15 minutes. At the end of the sulfuric acid addition, the neutralization rate reached 50 %. Thereafter the reaction liquid was heated to 95°C, and which the temperature of 95°C was maintained, 22% sulfuric acid was added at a rate of 5.1 mL/min. until the neutralization rate reached 100%. At the time the reaction terminated, the resultant reaction slurry had a pH of 5.4 and concentration of solid silica of 45g/L.

This reaction slurry was filtered under reduced pressure and the recovered solid was washed with ion-exchange water to provide a silica cake. Upon measurements of physical properties of this silica cake, its water content was 89.1% by weight (silica content, 10.9% by weight), light-scattering index, n-value, was 1.6, and BET specific surface area was 294 m²/g.

The above concentration of solid silica in the reaction slurry and those physical properties of the silica cake were measured by the methods as described in the specification of this application.

Relationship between number times of the high-pressure homogenizer (78 Mpa) treatment and n-value

once:	n-value = 1.6
3 times:	n-value = 2.3

[Conclusion]

As is clear from the above results, the cake of precipitated silica produced of the reproduction experiment of Kono process had a BET specific surface area of 294 m²/g, satisfying the requirement (at least 220 m²/g) as specified in Claim 1 of the present application. However, it had the n-value of 1.6 which is less than the requirement (at least 2) as specified in Claim 1 of this application, and lacked easy dispersibility.

Accordingly, I conclude that the easily dispersible precipitated silica cake claimed in Claim 1 of the present application differs from the precipitated silica cake which is disclosed in Kono.